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PESTICIDE-TREATED PLASTIC MEMBRANE

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(57) Claim

1. A method of producing a plastic, pesticide-treated, termite barrier membrane including the steps of:

applying pesticide to one face of a sheet of plastic; and

laminating a second sheet of plastic to the first sheet to enclose the pesticide-treated face,

the sheets being laminated so that no air is enclosed by the sheets, and the pesticide forming a film between the sheets.

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ORIGINAL

COMPLETE SPECIFICATION

STANDARD PATENT

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Invention Title: Pesticide-treated plastic membrane

The following statement is a full description of this invention, including the best method of performing it known to me:-

Full application details follow.

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(54) Invention Title: "PESTICIDE-TREATED PLASTIC MEMBRANE"

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Title: "PESTICIDE-TREATED PLASTIC MEMBRANE"

BACKGROUND OF THE INVENTION

(1) Field of the Invention

THIS INVENTION relates to a pesticide-treated plastic membrane. The membrane is particularly suitable for, but not limited to, prevention of subterranean termites. The term "termite" shall include other insects in the soil, including white ants, black ants and the like.

(2) Prior Art

Effective control of termites is a major problem throughout the world. The currently employed control method is to spray a pesticide liquid onto the soil before the foundations are laid, so that the water carriers, solvents and emulsifiers dry out. The active pesticide is left behind in the soil as a termite barrier.

With time, the pesticide breaks down, and the effectiveness against termites degrades until no barrier is left.

It is our observation, over many years, that termites have the ability to detect both food sources and pesticides through the soil from some distance away. Therefore, it is not necessary for the termites to come into physical contact with the pesticide for it to form an effective barrier, as termiticides are active as a repellant rather than as an insecticide.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a safe, effective method in placing the pesticide in the soil as a barrier to termites.

It is a preferred object to provide a method where the pesticide will have a long, effective life.

It is a further preferred object to provide a method which is environmentally safe.

It is a still further preferred object to provide an effective barrier product.

Other preferred objects will become apparent from the following description.

In one aspect, the present invention resides in a method of producing a, plastic pesticide-treated, termite barrier membrane including the steps of:

applying pesticide to one face of a sheet of plastic; and

laminating a second sheet of plastic to the first sheet to enclose the pesticide-treated face,

the sheets being laminated so that no air is enclosed by the sheets, and the pesticide preferably forming a film between the two sheets.

Preferably, one face of the second sheet is also treated with pesticide, the two treated faces being laminated face-to-face to enclose the treated faces.

The two sheets may be formed from a single-folded sheet or from separate sheets (or sheets cut from respective continuous lengths on first and second rolls).

Preferably, the four sides of the two sheets are cold laminated, R.F. welded or otherwise sealed together. Alternatively, the pesticide may be mixed in the adhesive or glue used to bond the two sheets together. Suitable adhesives include polyvinylacetate (PVA) or nitrocellulose.

The pesticide is preferably a termiticide, preferably a synthetic pyrethoid. Suitable pesticides from this group include alpha cypermethrin, permethrin, deltamethrin. Other suitable pesticides include any organic phosphates or organo-chlorines that demonstrate a repelling effect, eg. chlorpyriphos.

In a second aspect, the present invention resides in a plastic, pesticide-treated, termite barrier membrane produced by the method hereinbefore described.

The barrier may be placed under building foundations, around trees or plants, or like locations

to deter ants and/or termites. The barrier can be substituted for the current damp-proof course membrane laid under concrete slates on the ground.

BRIEF DESCRIPTION OF THE DRAWINGS

To enable the invention to be fully understood, a number of preferred embodiments will now be described with reference to the accompany drawings, in which:

FIG. 1 is a (part-sectional) perspective view of a first embodiment of the membrane;

FIGS. 2 to 4 are schematic side view of alternative methods of manufacturing the membrane of FIG. 1;

FIG. 5 is a part-sectional perspective view of a second embodiment of the membrane;

FIG. 6 is a perspective view of a method of manufacturing the membrane of FIG. 5;

FIG. 7 is a perspective view of a third embodiment of the membrane;

FIG. 8 is a schematic side view of a method of manufacturing the membrane of FIG. 7; and

FIG. 9 is an end view showing the membrane in use to protect building foundations.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

EXAMPLE I (FIGS. 1, 2)

Two sheets of plastic 10, 11 are drawn from respective vertically-spaced supply rolls 12, 13 and the upper face 14 of the lower sheet 10, and the lower face 15 of the upper sheet 11, are drawn past respective coating rollers 16, 17 which apply a coating of pesticide 18 (e.g. permethrin) in a volatile solvent, to the faces of the sheets. The coated faces of the sheets are brought together by rollers 19, 20 and the sides of the sheets are "cold welded" by passing them between compressive rollers 21, 22. The sheets are also "cold

welded" transversely at regular intervals by a cold welding head 23 and the laminated sheets are cut to length, immediate the transverse cold welds, (see line A-A on FIG. 1) by a cutter head 24.

The resultant product is a termite barrier 25 with a micro-layer of pesticide particles 18 contained (and sealed) between two sheets of plastic 10, 11, which may be laid under building foundations, or placed around trees or plants, to protect the foundations, trees or plants from termite attack. (In FIG. 1, the thickness of the layer of pesticide 18 has been exaggerated for drawing clarity.)

EXAMPLE II (FIGS. 1, 2)

This method is as for Example I except that the pesticide is mixed with ink and is printed on the faces 14, 15 of the plastic sheets 10, 11 by printing rollers 16, 17 using the method disclosed in Australian Patent No. 557130 (= International Publication No. WO84/02447 = U.S. Patent No. 4,576,801) (B. J. MORRISON).

EXAMPLE III (FIGS. 1, 3)

This is as for Example I except that the pesticide 18 is applied to the faces 14, 15 of the plastic sheets 10, 11 by brushes 16a, 17a.

EXAMPLE IV (FIGS. 1, 4)

This is as for Example I except that the pesticide 18 is mixed in a solvent which may incorporate emulsifiers, and is sprayed in liquid form onto the sheets 10, 11 using spray nozzles or spray bars 16b, 17b.

EXAMPLE V (FIGS. 1, 4)

This is as for Example IV except that the pesticide 18 is sprayed onto the sheets 10, 11 in fine powder form.

EXAMPLE IV (FIGS. 5, 6)

The pesticide 118 is mixed with ink and is

printed on one side of the sheet of plastic 110 by a printing roller 116. The pesticide is printed by the method disclosed in Australian Patent No 557130 (= International Publication No WO84/02447) (B J MORRISON).

The sheet 110 is folded in half using folding roller 126, with the printed faces brought together and the three free sides 127 are glued or "cold welded" together to seal the pesticide 118 within the barrier product 125.

The pesticide 118 may alternatively be applied by rollers, brushes or sprayed as described in Examples I, III to V above.

EXAMPLE VII (FIGS. 7, 8)

A first plastic sheet 210 is passed under a powder spray head 216b which sprays a controlled layer of pesticide 218, in fine powder form (eg. chlorpyriphos) on to the upper face 214 of the sheet 210. A second plastic sheet 211 is laid over the first sheet 210 and is sealed thereto e.g. by a "cold" welder or R.F. welder 223 about the four edges. Again, the pesticide is sealed within the barrier product 225.

EXAMPLE VIII

This is the same as Example VII except that the pesticide is mixed in a solvent, which may incorporate emulsifiers, and is sprayed in liquid form onto the sheet 210. The solvent may be allowed to vapourise before the two sheets 210, 211 are laminated together.

EXAMPLE IX

The pesticide 218 is used with PVA glue and is applied to at least one of the sheets of plastic 210, 211 as described in Example VIII above. The sheets 210, 211 pass between pairs of compressive rollers 221, 222, which bring the coated faces of the sheets into contact, to expel any air therebetween. The sheets are

laminated together, are cut to length and may be heat-sealed around the four sides if required.

EXAMPLE X

The pesticide is mixed with nitrocellulose glue and is sprayed onto one or both of the sheets, which are then laminated as per example IX above.

In the above Examples, as the pesticide is not on the outer surfaces of the barrier product, the barrier product can be handled with no health hazard to the operator. The pesticide does not degrade or leach away, sealed in the plastic envelope, and remains in the plastic envelope indefinitely.

As shown in FIG. 9, the barrier product 25, 125, 225 may be placed around the footings 30 of a building floor structure 31 and may be placed at strategic locations under the floor structure. The barrier product 25 may also be used as the damp-proofing membrane in a building structure.

The advantages of the present invention are as follows:

(1) it eliminates the environmental problems that are intrinsic with spraying on building sites;

(2) it eliminates the environmental problems associated with the disposal of used pesticide containers;

(3) it can replace spraying, may be more economical and has a much longer effective life;

(4) it enables termite protection in remote areas where conventional methods are not economic by facsimile;

(5) it can be used as a protective sheath around trees or plants, or around underground (electric and/or telecommunications) cables;

(6) it removes the potential pollution caused by dumping of pesticide-treated soil from under demolished buildings; and

(7) the barriers are safe to handling by human operations.

Various changes and modifications may be made to the embodiments described without departing from the scope of the present invention defined in the appended claims.

CLAIMS

1. A method of producing a plastic, pesticide-treated, termite barrier membrane including the steps of:

applying pesticide to one face of a sheet of plastic; and

laminating a second sheet of plastic to the first sheet to enclose the pesticide-treated face,

the sheets being laminated so that no air is enclosed by the sheets, and the pesticide forming a film between the sheets.

2. A method according to Claim 1 wherein:

one face of the second sheet is also treated with pesticide, the two treated faces being laminated face-to-face to enclose the treated faces.

3. A method according to Claim 1 or Claim 2 wherein:

the two sheets are formed from a single folded sheet, from separate sheets, or sheets cut from continuous lengths on first and second rolls.

4. A method according to any one of Claims 1 to 3 wherein:

the four sides of the two sheets are cold laminated, radio frequency (R.F.) welded or otherwise sealed together.

5. A method according to any one of Claims 1 to 4 wherein:

the pesticide is mixed in adhesive or glue to bond the two sheets together.

6. A method according to any one of Claims 1 to 5 wherein:

the pesticide is a termiticide.

7. A method according to Claim 6 wherein:

the pesticide is selected from the group: alpha cypermethrin, permethrin, deltamethrin, chlorpyriphos or

other material demonstrating a repellant effect on subterranean termites.

8. A method according to any one of Claims 1 to 7 wherein:

the pesticide is applied to the sheet, or sheets, by rollers, printing, brushes, dry spraying, or wet spraying mixed with a solvent.

9. A laminated plastic pesticide-treated, termite barrier membrane manufactured by the method of any one of Claims 1 to 8.

10. A plastic, pesticide-treated, termite barrier membrane including:

a pair of plastic sheets laminated together so that no air is enclosed by the sheets;

a film of pesticide between the sheets; and

a face of at least one of the sheets being treated with pesticide and the treated face (or faces) being enclosed by the two sheets.

11. A membrane according to Claim 10 wherein:

the plastic sheets are formed from a single folded sheet, a pair of separate sheets, or from sheets cut from respective supply rolls.

12. A membrane according Claim 10 or Claim 11 wherein:

the pesticide is a termiticide.

13. A membrane according to Claim 12 wherein:

the pesticide is selected from the group: alpha cypermethrin, permethrin, deltamethrin, chlorpyriphos or other material demonstrating a repellant effect on subterranean termites.

14. A method of producing a plastic, pesticide-treated, termite barrier substantially as hereinbefore described with reference to the drawings and the respective Examples.

15. A plastic, pesticide-treated, termite barrier membrane substantially as hereinbefore described with

reference to FIG. 1; or FIG. 5; or FIG. 7: of the accompanying drawings.

DATED this ninth day of June 1993.

M.J.A. SCIENTIFICS INTERNATIONAL PTY LTD,
By their Patent Attorneys,
GRANT ADAMS & COMPANY.

Title: "PESTICIDE-TREATED PLASTIC MEMBRANE"

ABSTRACT

A laminated plastic termite barrier membrane has pesticide applied to at least one face of a pair of sheets, or a folded sheet, which is sealed within an envelope formed by the sheets (or sheet). The membrane is placed in the soil to protect buildings, foundations, trees, plants or the like from termite attack.

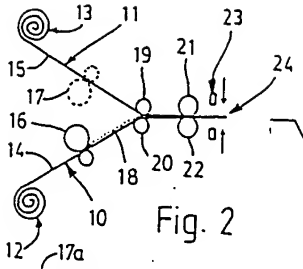

Fig. 2

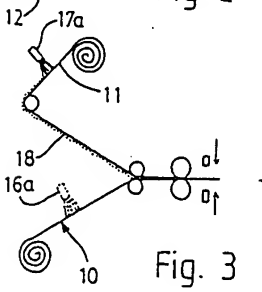

Fig. 3

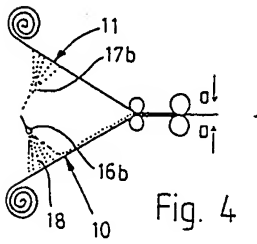

Fig. 4

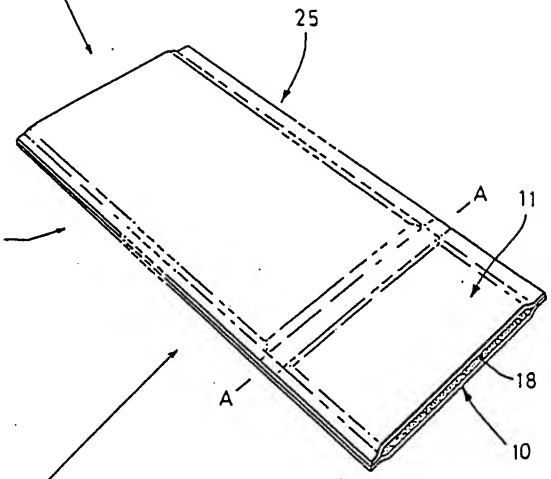

Fig. 1

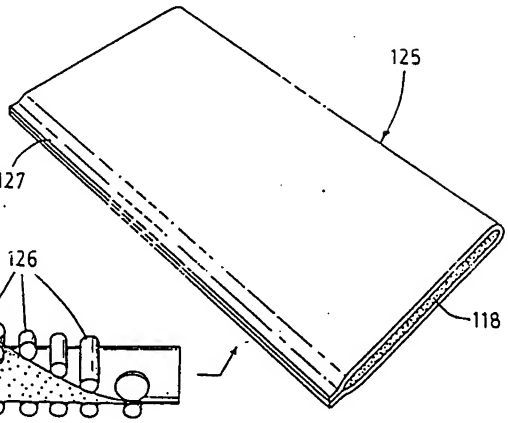

Fig. 5

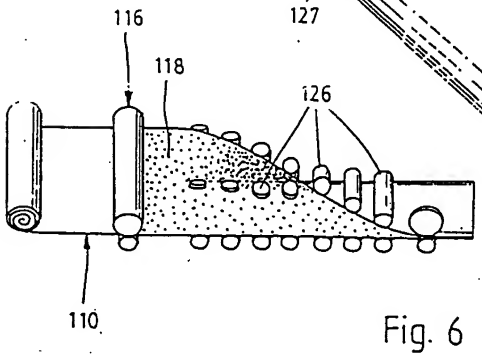

Fig. 6

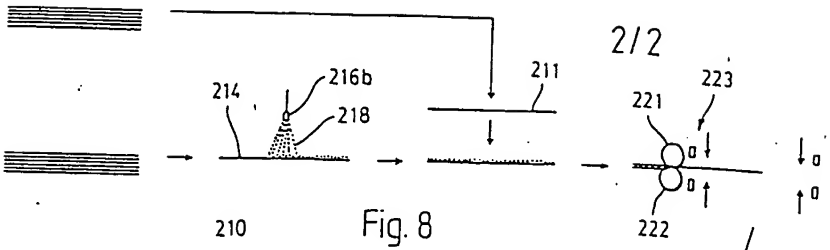

Fig. 8

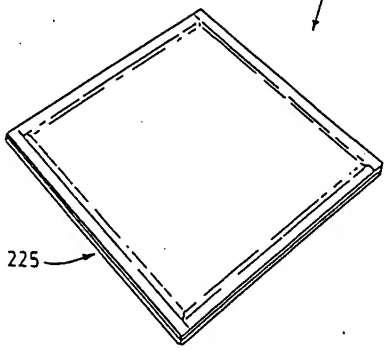

Fig. 7

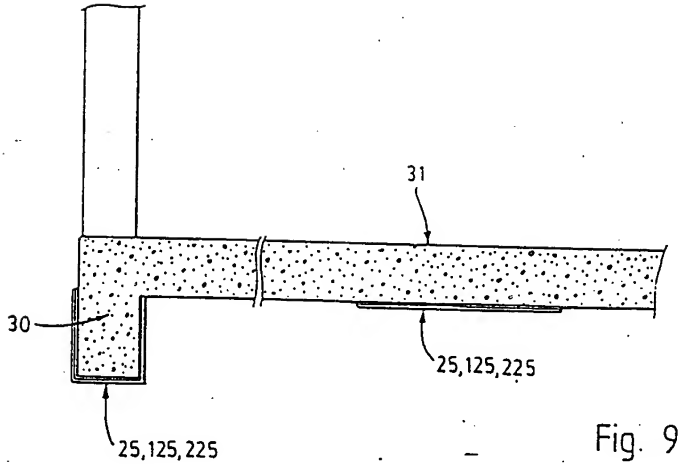

Fig. 9